

PROJECT NUMBER: 2106
PROJECT TITLE: Cigarette Performance and Design
PROJECT LEADER: R. W. Dwyer
PERIOD COVERED: May, 1990

I. PUFF COUNT CONTROL (D. Newman & B. Dwyer)

- A. **Objective:** Determine the effects of wood-pulp cigarette wrappers on puff count.
- B. **Results:** Six cigarette designs were fabricated using wood-pulp wrappers at various permeabilities and citrate levels; a companion set was fabricated with similar permeabilities and citrate levels using conventional flax papers.
- C. **Conclusions:** Determinations of puff count, static burn times, and mass burn rates indicate that there are no significant differences in these properties between wood-pulp and flax papers.

II. FILTER PAPER ACETYLATION (D. Simpson)

- A. **Objective:** Acetylate the surface of paper filters in order to provide the filtration efficiencies of paper and the subjective character of cellulose-acetate tow.
- B. **Results:** In the laboratory, we have demonstrated that the paper used to make paper filters can be acetylated by either esterification or trans-esterification. Direct esterification with acetic anhydride and an acid catalyst appears to provide the best product in the laboratory. It was also found that rinsing the resultant product with ethanol rather than water provides a material with greater mechanical strength and a high degree of substitution. Subjective evaluations of cigarettes made with paper filters and acetylated-paper filters showed a significant advantage for the acetylated samples.
- C. **Conclusions:** The major problem in implementing this program has been finding a source of acetylated paper. Paper manufacturers are reluctant to work with the required chemicals, and chemical companies are not set up to treat bobbins of paper.
- D. **Plans:** We are in the process of arranging a secrecy agreement with James River Co. in order to pursue this idea with them. We are also looking into the feasibility of setting up a pilot-scale acetylating facility inhouse.

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